ART-WORK SIZE STANDARDS FOR PROJECTED VISUALS

It is both a convenience and an economy if an artist producing originals from which projected visuals are made can adopt certain size standards. These should be considered from several points of view:

Size should be convenient for the artist

Art work that is too large encourages treatment too delicate for good intelligibility.

Art work that is too small calls for extreme care in production.

The size selected should make it easy to attain the line weights and letter sizes needed to insure legibility.

Size should be convenient for filing

It is convenient to store art work in a standard letter file. This makes classification simple and provides good protection.

Size should permit economical use of photographic materials

Film and paper in 8" x 10" size are common in photographic work, and it would be advantageous to adopt a size that would allow direct use of photographic images in this size.

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The standard should permit the same art work to be used for all types of projected visuals

The same piece of art work should serve for the following classes of finished material:

Single-frame and double-frame 2" x 2" slides and filmstrips.

Motion-picture titles and animation.

Transparencies for overhead projectors (7" x 7" and 10" x 10").

Standard lantern slides with a 2 1/4" x 3" mask opening.

Double-frame slides 2" x 2" and single-frame filmstrips produced from the same art work are very common.

In most laboratories, television use must be considered.

Constant size and registration

Each piece of art work should permit a constant scale of reduction for each class of visual material. The image should be located on the mount so that register pins can be employed to locate the art work on the copying easel.

In resolving these considerations, the following factors should be taken into account:

Legibility requirements

To insure accurate recognition of symbols, they should subtend at least 9 minutes of arc from the position of the farthest viewer. When this position is expressed in multiples of the longer dimension of the projected image, the minimum size of the symbols on the art work can be expressed as a fraction of the narrow dimension of the area to be reproduced on the screen. This is based on an image with a 3- by -4 aspect ratio.

Distance to farthest spectator in multiples of long dimension of screen image. (W).	Ratio of height of smallest symbol to the narrow dimension of area of art work reproduced on screen.
4W	1:75
6W	1:50
8W	1:35
10W	1:30
12W	1:25

$\tan 9' = .00262$

Ratios of area dimensions

The area of the art work recorded by the copying camera is different for each of the forms mentioned.

In addition, the area of the transparency shown on the screen is different from the area recorded by the camera. These dimensions are shown in the following table:

	Film aperture of the camera	Projection-mask aperture	Ratio of mask-opening dimensions
Double-frame slide	24 x 36 mm	23 x 34 mm	.676:1
Single-frame slide	18 x 24 mm	17.5 x 23 mm	.761:1
Overhead projector	not fixed	5 x 7 in.	.714:1
		8 x 10 in.	.800:1
Standard lantern slide	not fixed	2¼ x 3 in.	.750:1

Size Recommendations for 7 1/2 x 9 1/2-inch Template

	6W	12W
Grid lines, diagram details, lightest table rulings	LeRoy #00 pen (.013 inch)	LeRoy #1 pen (.021)
Borders, heavy table rulings, outlines of vessels and structures.	LeRoy #1 pen (.021 inch)	LeRoy #4 pen (.043)
Data lines on graphs, flow lines on charts	LeRoy #4 pen (.043 inch)	LeRoy #8N pen (.085)

Smallest number or letter symbols for satisfactory legibility when viewer is at a distance 6 times the horizontal dimension of the projected image (6W) . . . . . 1/8 inch high

Smallest number or letter symbols for satisfactory legibility when viewed at a distance of 12 times the horizontal dimension of the projected image (12W) (use this for television) . . . . . 1/4 inch high

All but the 8" x 10" mask opening of the overhead projector fall within the range of mask-opening ratios represented by the single-frame and double-frame slide. Therefore, these two forms can be used for design limits.

The picture aperture of the filmstrip

The image aperture of most filmstrip projectors is the same size as the single-frame camera aperture. To insure a sharp edge to the projected image on all sides, it is common practice to photograph the art work with a mask either in the film aperture of the camera or over the art work to produce a black border on the film. This, rather than the gate aperture of the projector, determines the true picture aperture of the filmstrip.

It is reasonable to assume that the mask opening in this instance will correspond with the opening in the slide mask — i.e., 23 x 34mm for double-frame and 17.5 x 23mm for single-frame filmstrips.

These considerations resolve themselves into the following specifications:

Over-all size

All art work shall be mounted on matte gray cards 10" x 12" in size. This is an economical cut from standard show-card sizes (22" x 28" and 28" x 44").

Registration

The image to be reproduced shall be centrally located so that registration on the copying easel can be controlled by using pins either in contact with two edges of the mount or in conjunction with holes located at a fixed position with reference to the area to be reproduced.

Image size

The art work shall be designed so that it presents a "good," or "neat," area, at least 7 11/32" x 9 1/2" in size. This provides a safety margin approximately 1/2" wide around the area recorded by the camera. For 35mm slides, the details of the art work to be seen by the audience must lie within an

area 5 3/4" x 8 1/2". This is called the "safe area."

For 16mm motion pictures, the details of the art work to be seen by the audience must lie within an area 6 11/32" x 8 1/2".

For material used on television, a smaller safe area should be used. This area is shown on the KODAK Art-Work Template No. (S-25) represented on page 7.

Camera standards

For double-frame 2" x 2" slides or filmstrips—

Area of subject appearing within mask opening: 5 3/4" x 8 1/2" (based on 24 x 36mm camera aperture and 23 x 34mm mask opening)

For single-frame 2" x 2" slides of filmstrips (also motion-picture titles and animation)—

Area of art work reproduced on the screen: 6 11/32" x 8 1/2" (based on an 18 x 24mm camera aperture and a mask opening of 17.5 x 23mm)

Note: These areas are not to be indicated by lines on the art work. This would interfere with its multiple use. Transparent templates should be used as guides.

Masking practice

For filmstrips, a black mask shall be placed over the art work or within the gate of the camera so that the film will bear a black border whose opening will correspond to the mask opening specified.

The art-work mask opening shall be 5 3/4" x 8 1/2" for double-frame and 6 11/32" x 8 1/2" for single-frame filmstrips. The corners shall be rounded to a 1/4" radius.

The illustration and captions explain the positions of the guide lines for the artist and the areas covered by the various projection and camera apertures, including television. The illustration, as printed, is the proper size for art and camera work in a 3 x 4-inch format and can be copied or traced on translucent paper to obtain a template.

The 7 1/2 x 9 1/2-inch format is much more widely used. To get a template bearing all the proper lines, send 25 cents with your name and address to Sales Service Division, Eastman Kodak Company, 343 State Street, Rochester N. Y., 14650. Request the KODAK Art-Work Template No. (S-25).

3 x 4-Inch Template (for Jumbo-Prints or Typewritten Copy)

The template on the following page has been designed so that the safe area is small enough to accept a regular 3 1/2 x 5-inch photographic print. If the print is centered, the image area (3 x 4 1/2 inches) will fill the "good" or neat area of the template.

The "projected" areas of the template are small enough so that a typewriter with elite type will provide approximately 6W legibility. Pica type will provide approximately 8W legibility.

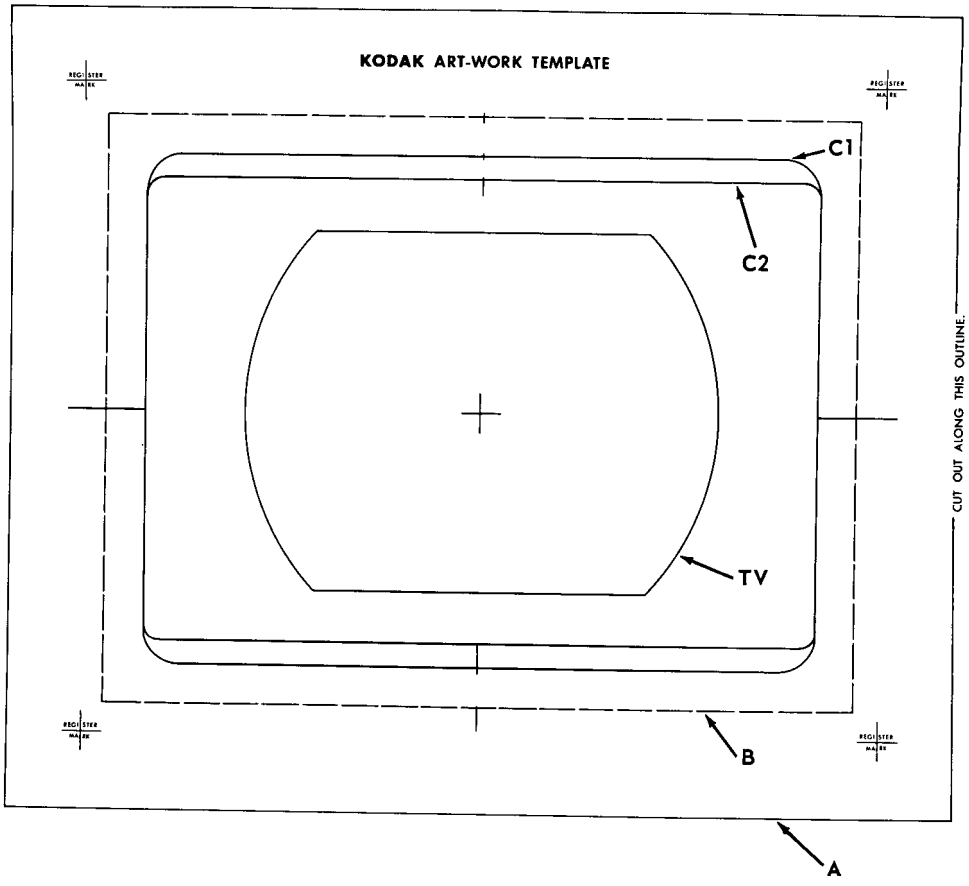
A. If you cut this template out, instead of tracing it, cut on this line.

B. Represents a safety border. Background or art work must be "good" or "neat" at least to this line.

C1, C2, and TV. Inner solid lines represent Projected Areas. Cut out on the solid line representing the Projected Area for the medium you intend to use. Compose all significant material within this area.

C1. Projected Area for Single-frame Filmstrip 17.5 x 23mm or 16mm, Motion Pictures 7.21 x 9.65mm.
C2. Projected Area for 35mm Slides, 23 x 34mm Mask.
TV. Projected Area for TV allows for standard scanning and further masking by receiver.

Projected Area assumes precise slide mounting and properly framed motion picture projection. Stay 3/16 inch within solid lines and leave 1/8 inch extra safety border if transparencies are to be semiautomatically mounted in cardboard.



Sales Service Division

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